

## **TECHNICAL SPECIFICATION FOR HV VARIABLE FREQUENCY DRIVE SYSTEM**

### **Scope**

Scope include the comprehensive assessment of all design, engineering, erection, testing & commissioning work for the MV Variable Speed Drive (VSD) and consider all the requirement in scope for completion of work and submit offer accordingly.

VSD shall be supplied in accordance with the requirements suitable for below drives, specification applicable codes and standards.

1. ID Fan Motor (5.4 MW, 11 KV, 333 A, 745 RPM, Horizontal) – Also, bypass arrangement with confirmation that motor should run with / without VFD
2. CEP Pump Motor (2.2 MW, 11 KV, 138 A, 1493 RPM, Vertical Mounting) – To operate 02 Nos. motor with single VFD panel & standalone configuration in case of any fault in the VFD / plant requirement
3. BA Slurry Pump Motor (200 KW, 11 KV, 24 A, 980 RPM, Horizontal) – to operate 02 Nos. motor with single VFD panel & standalone configuration in case of any fault in the VFD / plant requirement

### **Notes:**

1. Vendor to analyze required 11 kV switchgear modification/addition as per existing system configuration and indicate the same in their offer. All the required modifications/additions due to addition of VFD system in the 11 kV OR 415 V switchboard are in the scope of vendor. Vendor to check and indicate interface requirement with DCS. All interface requirements and any changes in control scheme are in the scope of vendor.
2. Motor Pumps / Motor Fan set shall be fed from VSD system which includes input converter transformer. Protection and Metering for VSD system shall be as per attached specifications for VSD system and referred codes and standards. The list indicative only, further, vender to access the site requirement & include the same in the offer.
3. Vender to provide the guaranteed scope of the energy savings based on running parameter provided by TSPL. TSPL is open to provide the present consumption data to exact evaluation of the energy saving.
4. Vender to confirm that pump performance will not be disturbed after implementation of the VFD.
5. Vender to consider VSD panel room with civil structural as per designated place provided by TSPL. Vendor to indicate requirement of Air-conditioned room for the same (If any). However, equipment shall be suitable for operation even during failure of Air-Condition. Site Ambient should be consider 50 °C.
6. With reference to limits of harmonics as per IEEE 519, the harmonics are to be controlled at 11 kV bus. The overall power factor of the System at 50% & 75 % load shall not be less than 0.99 OR vender to provide / fix before ordering.
7. Any other accessory, fixing hardware, switches etc. which shall be required for satisfactory operation and completeness shall be provided by vendor.
8. Type test certificates and utility consumption list shall be submitted with the offer.

9. Inspection and Testing at works shall be as per VSD specification.

10. Final Documentation:

- a. Vendor to furnish Hard Copy and electronic files of all the documents indicated for final documentation in addition of hard copy.
- b. Vendor to furnish all drawings and documents either in MS Word, MS Excel, AutoCAD, Micro station stored in electronic media.
- c. Final documentation shall be provided along with hard copies in compact disc compatible with standard PC based application.
- d. All operating and maintaining instructions in electronic media or in scanned images converted in electronic media.

11. Final documentation shall be provided in CD with proper index along with hard copies.